## 8.1 List of Source Code

(The details of the code can be referred to “\EV\_Grid\code” documents.)

gen\_Matlab\_data.m: This script converts the NTHS data from excel format into Matlab’s table format.

FUN\_SOCalter.m:

altPlan1test.m: This Sub function finds the SOC when the alternative plan 1 is applied. This plan charges a vehicle fully in one randomly determined charging step.

altPlan1test.m: This Sub function finds the SOC when the alternative plan 2 is applied. This plan charges a vehicle in two charging steps, the first of which starts as soon as the vehicle arrives home; after a pause of random length, the vehicle is charged fully

altPlan1test.m: This Sub function finds the SOC when the alternative plan 3 is applied. This plan charges a vehicle halfway in two randomly determined charging steps.

altPlan1test.m: This Sub function finds the SOC when the alternative plan 4 is applied. This plan charges a vehicle in three discrete steps; the first step starts immediately; breaks among the charging steps are randomly determined.

altPlan1test.m: This Sub function finds the SOC when the alternative plan 5 is applied. This plan charges a vehicle halfway in three randomly determined charging steps.

FUNC\_distance.m: This function output distance-t profile for certain household, the inputs include a NTHS table and the Household ID.

FUNC\_electricity.m: This function derives electricity consumption from a given SOC.

FUNC\_location.m: This function derives location-t profile for a person with a given housed and NTHS table.

FUNC\_SOC.m: This function derives state of charge profile in a day from given household ID, given car model and the NTHS table.

FUNC\_speed.m: The function gets speed-t profile for a person with a given household ID.

gen\_benchmark.m: The script obtains the benchmark total energy consumption, which means all the electric vehicles do not have alternative plans. They charge immediately as soon as they arrive home.

generateSOC.m: This script generates a sample SOC profile for alternative plan testing.

gen\_ExpInputData.m: This script generates the experimental input data file and folders for the EPOS optimization engine